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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/811,581	03/20/2001	Akira Fukunaga	FUKUNAGA-3	2108

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EXAMINER

EDMONDSON, LYNNE RENEE

ART UNIT	PAPER NUMBER
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1725

12

DATE MAILED: 06/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/811,581

Applicant(s)

FUKUNAGA ET AL.

Examiner

Lynne Edmondson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 47-61 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 47-61 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 47, 48, 50-56, 58, 59 and 61 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagasawa et al. (WO 98/26889 A1) using the US equivalent (USPN 6358611) as a translation.

Nagasawa teaches a composite metallic ultrafine particle comprising a metal core surrounded by an organic compound comprising a functional group and some metal. The particle is formed by mixing a metallic salt, oxide or hydroxide with an organic material containing a carboxyl group and heating the mixture (col 6 lines 10-22). Fatty acid salts may be employed and metal content is from 50-90 wt% (col 2 lines 7-65). The particle size is between 1 and 100 nm, generally up to 50nm, preferably between 1 and 10 nm (col 3 lines 11-24). The examples teach particles of about the same size (50nm, col 8 lines 21-33). The mixture is heated to a temperature above the decomposition temperature of the salt but not more than that of the organic compound

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(col 3 line 52 – col 4 line 15) and may contain a reducing agent (silver nitrate, col 5 lines 5-11). The metal is dissolved in a hydrophilic solvent (alcohol, col 4 lines 20-31). See also Nagasawa claims 1-4 and 6.

2. Claims 47-61 are rejected under 35 U.S.C. 102(e) as being anticipated by Murray et al. (USPN 6262129 B1).

Murray teaches a composite metallic ultrafine particle comprising a metal core formed from a metallic salt having a diameter of up to 20 nm wherein the metal is surrounded by an organic material (col 1 lines 1-20). The metal can be any metal particle such as Au, Ag, Pt, Pd, Ni, Co, Cu and other transition metals (col 1 lines 40-67 and col 6 lines 18-32) and includes an organic group which surrounds the metal core in an amount between 0.1 and 1 molecule (col 6 lines 55-67 and figures 4, 7, 8 and 14). The organic group may be an alcoholic hydroxyl (col 3 lines 36-48), carboxyl or thiol group (col 6 line 55 – col 7 line 11). The metallic salt is an acetate (col 7 lines 53-66) or chloride (claims 13-18) which is dissolved/decomposed under reflux conditions (heating) in a hydrophilic solution (alcohol) and adding to a hydrophobic nonaqueous solvent (hydrocarbon) an organic compound and a reducing agent comprising acid (col 3 line 6 – col 4 line 28). . The solution may also contain antioxidants (oleic acid, glycol, phosphine) for enhanced stability (col 7 lines 10-52). The alcohol chain may be straight or branched (col 6 lines 55-62). See also Murray claims 1-43.

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3. Claims 47, 48, 50-59 and 61 are rejected under 35 U.S.C. 102(e) as being anticipated by Leone et al. (USPN 6054507).

Leone teaches a composite metallic ultrafine particle comprising a metal core formed from a metallic salt having a diameter of 2 to 5 nm (col 10 lines 10-24). The metal can be any metal particle such as Ag, Au, Pd or Pt (col 11 lines 60-67) and includes an organic group (col 10 lines 44-68 and col 12 line 55 – col 13 line 8). The organic group may be a thiol or amine (col 11 lines 16-29), which surrounds the metal core in an amount between 0.1 and 1 molecule and comprises metal (col 1 lines 1-37 and col 10 line 57 – col 11 line 8). The metallic salt may be an acetate or chloride mixture which is dissolved under reflux conditions (heating, col 13 lines 1-6) in a hydrophilic solution (ethanol) and adding to a hydrophobic nonaqueous solvent (hydrocarbon) an organic compound and a reducing agent comprising an acid (col 11 lines 1-15). The solution may also contain antioxidants (additional reducing agents) for enhanced stability (col 11 lines 23-52). See also Leone claims 1, 2, 5, 12, 13 and 17-25.

### ***Response to Arguments***

4. Applicant's arguments with respect to claims 22-46 have been considered but are moot in view of the cancellation of the claims.

5. In response to applicant's argument that Nagasawa teaches the particle as a starting or intermediate particle rather than a final product particle, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

It is noted that the resulting particle is identical, that is a particle or particles with a diameter of 1-100 nm comprising a metal core and organic shell (col 3 lines 1-23).

Therefore the 102 rejection of new claims 47, 48, 50-56, 58, 59 and 61 as anticipated by Nagasawa is applied.

6. In response to applicant's argument that Murray teaches the particle as a starting or intermediate particle rather than a final product particle, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

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It is noted that the resulting nanoparticle which precipitates out is identical to the claimed ultrafine particle, that is a particle or particles comprising a metal core and organic shell (figures 11A-13). The reference also teaches a head group (X) which proves chemical attachment of the organic chain to the nanoparticles surface (col 6 lines 63-67) to form a stable composite material (col 2 lines 45-52 and col 6 lines 33-40).

Therefore the 102 rejection of new claims 47-61 as anticipated by Murray is applied.

7. Regarding applicant's argument that Leone teaches an organometallic material rather than an organic material, it is noted that the organometallic described in the reference is the final particle. The particle produces comprises a metal core surrounded by an organic covering or shell (col 1 lines 16-20, col 3 lines 38-43, col 2 lines 9-11, col 3 lines 8-15, col 3 lines 25-43, col 10 lines 43-53 and col 11 lines 53-67). The metal and organic material are chemically bound (col 3 lines 27-37). Carboxyl or amino groups are present (col 11 line 67, col 12 lines 25-29, col 12 lines 51-62 and col 13 lines 18-23).

Therefore the 102 rejection of new claims 47, 48, 50-59 and 61 as anticipated by Leone is applied.

***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fukunaga et al. (EPN 1107298 A2), Ebara Corp. (JPN 2002-363127-A), Kushino et al. (JPN 200-39737-A), Prasad et al. (USPN 5912257), Leone et al. (USPN 6369206), Das et al. (USPN 4680204, alcoholic hydroxyl nanoparticles), Unger et al. (USPN 6231834, alcoholic hydroxyl nanoparticles), Kito et al. (USPN 5328681, nanoparticles), Heath et al. (USPN 6103868, precursor) and Miller et al. (USPN 6080670, method).

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.



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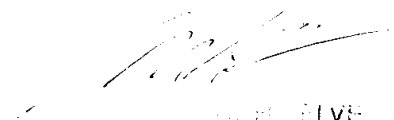
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne Edmondson whose telephone number is (703) 306-5699. The examiner can normally be reached on Monday through Thursday from 6:30 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703) 308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-7115 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

Lynne Edmondson  
Examiner  
Art Unit 1725

LRE  
June 11, 2003



LYNNE  
EDMONDSON